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The book is of great value to the state for its clear exposition of the elemental factors entering into the artesian conditions of Iowa, for its appeal to the people to pursue intelligent methods in obtaining their water-supply, and for its emphasis on the increasing necessity of securing drinking-water free from organic matter. This creditable volume was planned during the régime of the late state geologist, Samuel Calvin, and completed under his successor, G. F. Kay. The work was carried on by the State Survey in co-operation with the United States Geological Survey.

M. M. LEIGHTON

The Coal Deposits of Missouri. By Henry Hinds. Missouri Geological Survey, Vol. XI, 2d Series, pp. 503; pls. 23; figs. 97; maps 7.

The present volume which is the result of co-operation between the Missouri Geological Survey and the U.S. Geological Survey, concerns itself with an economic discussion of the coals of Missouri. Quite properly, a mere outline of the stratigraphy is given and the deeper scientific problems are to be presented in a later report.

The arrangement of the volume is admirable. A short general discussion of the stratigraphy and structure is followed by a chapter on the mode of occurrence of the coals and a description of the different beds and fields. Statistics are presented showing production for various periods. The detailed report by counties arranged alphabetically, is a very desirable feature. Most of the letters of inquiry received by state surveys refer to counties, and it is thought that the grouping of detailed information into county units best meets the needs of the average reader.

Separate chapters are devoted to the quality and efficiency of the coals. In general, the fixed carbon and heat value decrease gradually across the state from south to north and west, the best coals occurring where the Ozark uplift had its greatest devolatilizing effect. Unfortunately, in the chapter on chemical analysis, it is not always clear whether figures given represent values "as received," "air-dried," or "moisture-free." In the tabulated analyses, emphasis is placed on "air-dried" values, whereas most engineers and consumers now compare coals either "as received" or on the "moisture-free" basis. On the latter basis, the coals of the entire state contain an average of 12,363 B.t.u. Tabulated results of tests on steaming, under boiler, for producer gas, on washed coal, and on coking and briquetting are presented in the final chapter.

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In districts where quadrangles have been surveyed topographically, full-size lithographed sheets are used to present the geologic features. Many of the figures are graphic sections showing the physical characteristics of the coal beds. A large geologic map of Missouri is included.

It is estimated that the original coal tonnage of the state, not including beds or parts of beds less than 14 inches thick, was 79,362,016,000. One hundred and ten million tons have been mined and perhaps 50,000,000 tons have been left in the ground as pillars. Probably 60 per cent of the remaining coal can be recovered, giving Missouri a future production of 47,702,108,400 tons.

The value of such a report to the commercial interests of Missouri can scarcely be overestimated. The author is to be congratulated on the useful and attractive form in which so much detailed information is made available.

F. H. K.